Lumbar disc herniation

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Intervertebral disc

Annulus fibrosus
- Resists tensile stresses
- Resists torsional stresses

Nucleus pulposus
- Distributes compressive stresses
Symptoms and Signs

- Radicular Pain – in the distribution of the involved nerve
- Neurological deficit – motor, sensory, reflexes
Relationship between disc levels and nerve roots

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### Variant 4: Radiculopathy

<table>
<thead>
<tr>
<th>Radiologic Exam Procedure</th>
<th>Appropriateness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain MRI</td>
<td>8</td>
</tr>
<tr>
<td>Myelogram/CT</td>
<td>5</td>
</tr>
<tr>
<td>CT</td>
<td>5</td>
</tr>
<tr>
<td>MRI + Gadolinium</td>
<td>4</td>
</tr>
<tr>
<td>Plain Lumbar X-Rays</td>
<td>4</td>
</tr>
<tr>
<td>Isotope Bone Scan</td>
<td>2</td>
</tr>
<tr>
<td>Myelogram</td>
<td>2</td>
</tr>
</tbody>
</table>

**Appropriateness Criteria Scale**

1 = Least appropriate  
9 = Most appropriate

ACR Appropriateness Scale  
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Plain radiographs

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87% with extruded herniation obtained satisfactory results with conservative measures.

• 10% required surgery for inadequate resolution of symptoms

Saal JA, Saal JS Spine 1989

Our study suggests that patients with sciatica for more than 12 months have a less favourable outcome. We detected no variation in the results for patients operated on in whom the duration of sciatica was less than 12 months.
Pathomechanism of spontaneous regression of the herniated lumbar disc: histologic and immunohistochemical study.


Inflammatory findings such as cell infiltration, neovascularization and granulation were observed in

• 16.9% of protruded discs
• 81.8% of subligamentously extruded discs
• 100% of transligamentously extruded disks
• 80% of sequestrated discs.
88% patients showed reduction of herniated mass on MRI.

Sequestrated and transligamentous extrusions more rapidly absorbed.

Morphologic changes of herniated mass correlated well with the clinical outcome.
208 patients with clinical features of radiculopathy analysed 2-4 weeks after onset of symptoms

- First 4 weeks – 70% reduced pain, 60% resumed work
- One year - 30% complained of back pain
  19.5% had not resumed work
- 4 patients underwent surgery

Treatment options

- Bed rest
- Pain medications
- Oral steroids
- Nerve root block
- Surgery
For patients with sciatica, there is little or no difference between advice to rest in bed and advice to stay active. There is little or no difference in the effect of bed rest compared to exercises or physiotherapy, or seven days of bed rest compared with two to three.
Transforaminal epidural steroid injection

Bupivacaine + steroid

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Transforaminal epidural steroid injections in lumbosacral radiculopathy: a prospective randomized study.

After an average follow-up period of 1.4 years, the group receiving transforaminal epidural steroid injections had a success rate of 84%, as compared with 48% for the group receiving trigger-point injections (P < 0.005).

Vad et al  Spine 2002
Relief of symptoms was obtained in 27 immediately after injection. Three subsequently relapsed, requiring operation, and two were lost to long-term follow-up. Thus 22 of the 28 patients available for long-term follow-up had considerable and sustained relief from their symptoms. Before the onset of symptoms 17 were
Discectomy - Indications

- Failure of non-operative measures
- Progressive / significant neuro deficit
- Signs of cauda equina compression
Surgical vs Nonoperative Treatment for Lumbar Disk Herniation
The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial
Patients with persistent sciatica from lumbar disk herniation improved in both groups. Operated patients reported greater improvements.
### Surgical vs Nonoperative Treatment for Lumbar Disk Herniation

The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial

#### Intraoperative complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dural tear/spinal fluid leak</td>
<td>10 (4)</td>
</tr>
<tr>
<td>Vascular injury</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (1)</td>
</tr>
<tr>
<td>None</td>
<td>230 (95)</td>
</tr>
</tbody>
</table>

#### Postoperative complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial wound infection</td>
<td>4 (2)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (4)</td>
</tr>
<tr>
<td>None</td>
<td>226 (95)</td>
</tr>
</tbody>
</table>

#### Reoperation at 2 years

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional surgery</td>
<td>13 (5)</td>
</tr>
<tr>
<td>Recurrent herniation</td>
<td>8 (3)</td>
</tr>
<tr>
<td>Complication or other</td>
<td>4 (2)</td>
</tr>
</tbody>
</table>

Weinstein et al. JAMA. 2006;296:2441-2450
Non-compressive radiculopathy

- Rare
- Diabetes
- Vasculitis
- Infection
- Tumor infiltration
END